Gamma I - Issue

Dates - train operator & acceptance
1 May thru 13 May

#1 lens ~~cemented~~ assembled with wrong element.

#2 lens exceeded #1 on lens bench
bad cost time (#)

Cam. problems - subcontractor
6 April looked good —

(See reverse side)

-2-

7 May check on status by phone
#1 returned for recementing.

15 June est delivery.
due to lens trouble.

25 May [redacted] STAT

STAT [redacted]

Lack of
Radial distortion too high
due to communication breakdown

Choices

* 1, Terminate contract. — [redacted] STAT

2, Continue present with OK

STAT [redacted] and receive instrument in its present state - bad resolution & distortion. 8-10 weeks

3, Continue present same OK & shelf lens - same as present [illegible] 8-10 weeks delivery

4, Continue (Fixed price) contract new lens design & construct [illegible] [redacted] STAT

11 June 1964

Gamma I Project

As a result of a request from [redacted] submits the following technical discussion and associated cost concerning two approaches to complete the Gamma I Rectifying Printers. STAT

Approach I - To complete the equipment with the present lenses and optimize the performance with the existing components.

Approach II - To redesign, fabricate and install new lenses to meet the original design specifications.

Approach I

Resolution. The static resolution obtained from Rectifier # 1, Lens # 2, taken with zero tilt, is as follows:

Nadir	91 l/mm
10°	91 l/mm
20°	72 l/mm
30°	57 l/mm
35°	51 l/mm

No meaningful dynamic tests were run as a result of the uncalibrated 3-D cam, however, the predicted dynamic resolution is as follows:

Nadir	72 l/mm
10°	72 l/mm
20°	64 l/mm
30°	46 l/mm
35°	36 l/mm

The variance between the static and dynamic resolution results from the 'wandering' nodal point separation as discussed previously between [redacted] and A.M.S. representatives. STAT

Distortion. The calculated distortion, based upon static results, are as shown in the accompanying curves. Investigations indicate that the distortion could be reduced by reshaping the curved output easel, but the reshaping would vary with altitude and would result in a contoured focusing cam. At best, it appears that little is to be gained by this approach.

Cost. The cost to optimize the equipment with the existing components will

STAT [ ]

Approach II

Resolution. The resolution will be:

Nadir	80 l/mm
35°	50 l/mm

with no point between these limits under 50 l/mm.

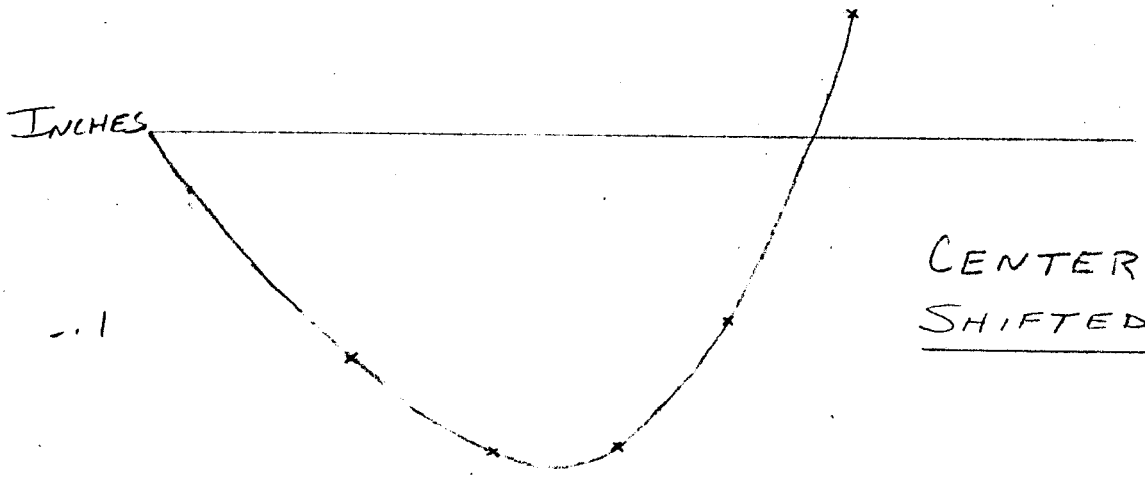
Distortion. The distortion of the output will be 0.010 inch between the limits as shown in 'Resolution' above.

Cost. The cost for Approach II will not exceed [ ] dollars. STAT

INCHES ALONG EASEL

.1

DISTORTION ALONG EASEL

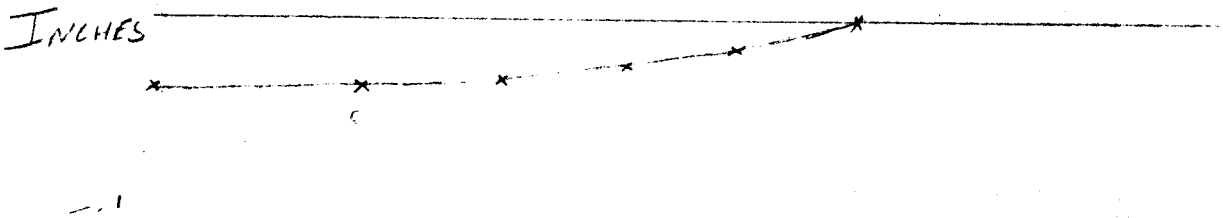


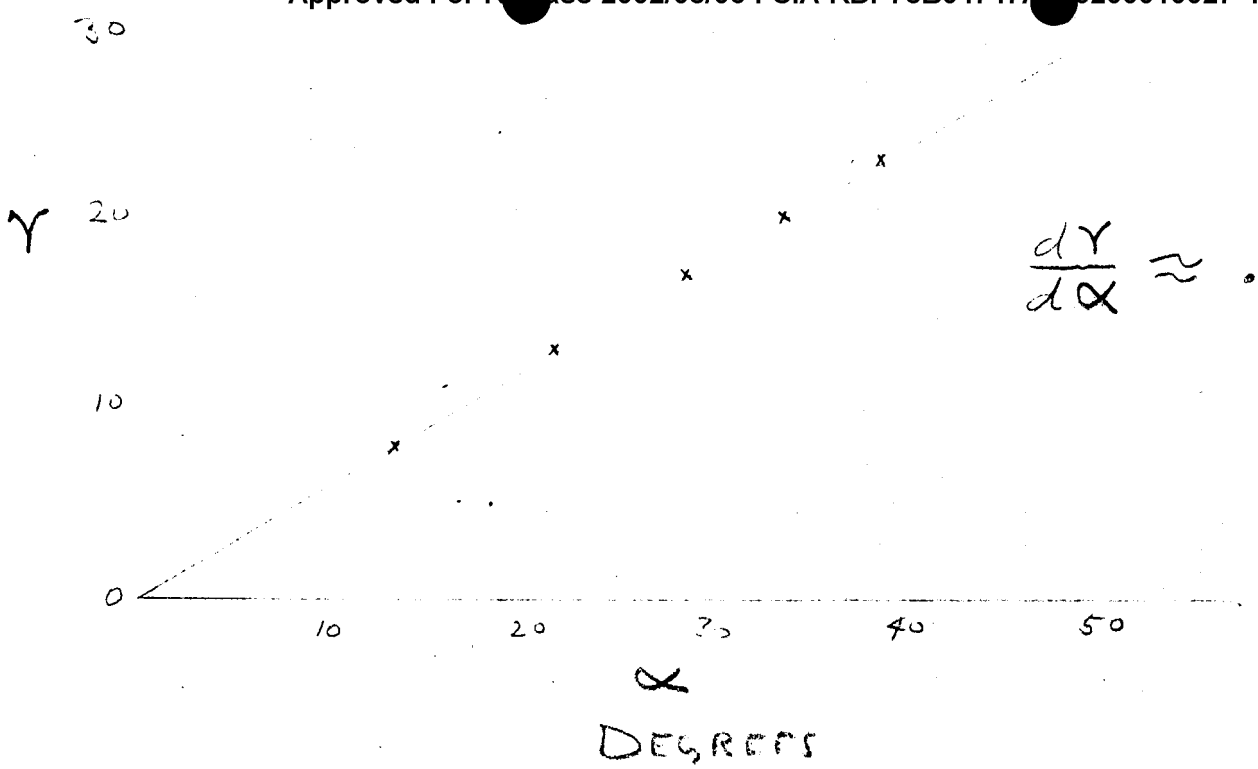
CENTER OF ROTATION SHIFTED BY -.315"

EASEL DISTORTED BY RADIUS OF 3000"

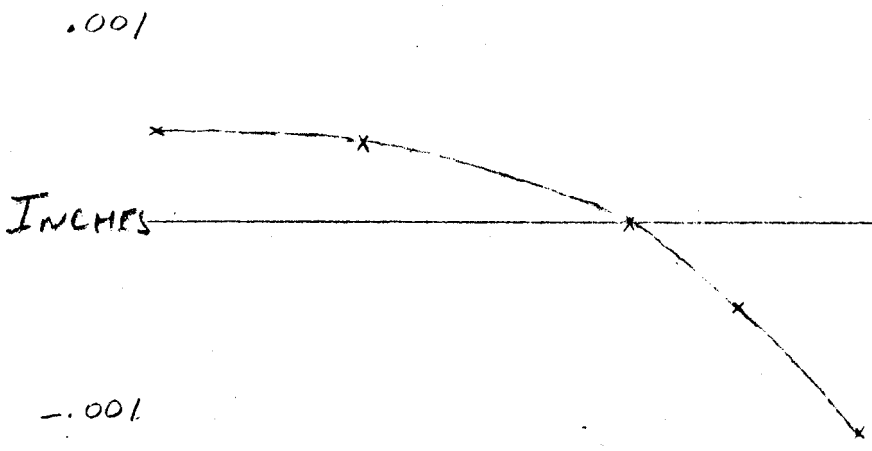
.1

DISTORTION ACROSS EASEL AT CONSTANT 1" INPUT





$\frac{dY}{d\alpha} \approx .584$



BLUR AT SHORT CONJUGATE DUE TO IMAGE MOTION.

SLIT WIDTH 1 MM.

0 10 20 30 40

INCHES ABOVE BASE